

Claims:

1. A shaving apparatus, comprising:
  - an outer cutter having a plurality of apertures;
  - 5 an undercutter assembly adjacent to said outer cutter; and
  - a motor for reciprocally moving said undercutter assembly in a reciprocation direction;
  - 10 said undercutter assembly comprising a primary undercutter and a secondary undercutter which are arranged such that blade elements of the primary and secondary undercutters are mutually interleaved;
  - 15 wherein the primary undercutter is coupled to said motor for driving thereof in the reciprocation direction
  - 20 and wherein the secondary undercutter is mounted for movement relative to the primary undercutter in the reciprocation direction such that, in response to the reciprocation of the primary undercutter, the secondary undercutter reciprocates relative to the primary undercutter.
- 25 2. A shaving apparatus according to Claim 1, wherein said secondary undercutter is mounted to the primary undercutter.
- 30 3. A shaving apparatus according to Claim 1, wherein said secondary undercutter is mounted independent of the primary undercutter.
- 35 4. A shaving apparatus according to Claim 1, wherein the primary and secondary undercutters are carried on a support block which is moveable in the reciprocation direction.
5. A shaving apparatus according to Claim 1, wherein the primary undercutter is biased towards the outer

cutter by a primary biasing element and wherein the secondary undercutter is biased to the outer cutter by a secondary biasing element.

5 6. A shaving apparatus according to Claim 5, wherein a first end of the secondary biasing element is connected to the primary undercutter and a second end of secondary biasing element is connected to the secondary undercutter.

10 7. A shaving apparatus according to Claim 6, wherein the secondary biasing element comprises a pair of coil springs.

15 8. A shaving apparatus according to Claim 6, wherein the primary and secondary biasing elements are arranged on at least one carrier.

9. A shaving apparatus according to Claim 5, wherein 20 respective first ends of the primary and secondary biasing elements are connected to a carrier and respective second ends of the primary and secondary biasing elements are connected to respective primary and secondary undercutters.

25 10. A shaving apparatus according to Claim 8 or 9, wherein at least one of the primary biasing element and the secondary biasing element is pre-biased by spacers which are disposed between the respective biasing element 30 and the carrier.

11. A shaving apparatus according to Claim 1, wherein 35 said secondary undercutter is nested within said primary undercutter and an outer circumference of the cutter assembly is formed by peripheral edges of the interleaved primary and secondary blade elements.

12. A shaving apparatus according to Claim 1, wherein the secondary undercutter comprises a plastics material.

5 13. A shaving apparatus according to Claim 1, further comprising a magnet for biasing the blade elements of the secondary undercutter into contact with the blade elements of the primary cutter in at least one reciprocation direction.

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14. A shaving apparatus according to Claim 13, wherein the secondary undercutter carries at least one pole of a first polarity and the primary undercutter has, adjacent the at least one pole of the secondary undercutter, at 15 least one pole of a second polarity opposed to said first polarity.

20 15. A shaving apparatus according to Claim 1, wherein the secondary undercutter reciprocates in lagging relationship to the primary undercutter.

25 16. A shaving apparatus according to Claim 1, wherein the secondary undercutter and the primary undercutter cooperate such that the interleaved blade elements move towards one another.

17. A shaving apparatus according to Claim 16, wherein the interleaved blades move towards one another in clamping relationship to hairs trapped therebetween.

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18. A shaving apparatus according to Claim 17, wherein the cooperating secondary undercutter and primary undercutter pull said trapped hair prior to cutting of said hair.

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19. An undercutter assembly for a shaver of the dry-type having an outer cutter and a motor drive mechanism, said undercutter assembly comprising:

5        a primary undercutter adapted to be reciprocated by the drive mechanism and having primary blade elements; and

10      a secondary undercutter disposed within said primary undercutter for displacement relative said primary undercutter and having secondary blade elements interleaved with said primary blade elements.

20. An undercutter assembly according to Claim 19, wherein said secondary undercutter is mounted to the primary undercutter.

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21. An undercutter assembly according to Claim 19, wherein said secondary undercutter is mounted independent of the primary undercutter.

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22. An undercutter assembly according to Claim 19, wherein

the primary biasing element is adapted to bias the primary undercutter to the outer cutter and

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the secondary biasing element is adapted to bias the secondary undercutter to the outer cutter.

23. An undercutter assembly according to Claim 22, wherein the secondary biasing element comprises a pair of coil springs.

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24. An undercutter assembly according to Claim 22, wherein a first end of the secondary biasing element is connected to the primary undercutter and a second end of secondary biasing element is connected to the secondary undercutter.

25. An undercutter assembly according to Claim 22, further including a carrier and wherein respective first ends of the primary and secondary biasing elements are connected to the carrier and respective second ends of 5 the primary and secondary biasing elements are connected to respective primary and secondary undercutters.

26. An undercutter assembly according to Claim 19, wherein said secondary undercutter is nested within said 10 primary undercutter and an outer circumference of the undercutter assembly is formed by peripheral edges of the interleaved primary and secondary blade elements.

27. An undercutter assembly according to Claim 19, 15 wherein the secondary undercutter comprises a plastics material.

28. An undercutter assembly according to Claim 27, wherein the blade elements of the secondary undercutter 20 comprise a plastics material having enhanced frictional characteristics.

29. A method of shaving for use with shaving apparatus having an undercutter assembly having a primary 25 undercutter and a secondary undercutter, said primary and secondary undercutters having interleaved blade elements; the method comprising the steps of:  
reciprocally moving the undercutter assembly in hair shearing relation with an outer cutter;  
30 moving the primary undercutter relative to the secondary undercutter;  
trapping hairs which are to be cut between interleaved blade elements of the primary and secondary undercutters ;

pulling said trapped hairs by continued movement of the undercutter assembly in a respective reciprocation direction; and

5 cutting said hairs between the outer cutter and the undercutter assembly.

30. A method of shaving for use with shaving apparatus having an undercutter assembly having a primary undercutter and a secondary undercutter, said primary and 10 secondary undercutters having interleaved blade elements; the method comprising the steps of:

reciprocally moving the undercutter assembly in hair shearing relation with an outer cutter;

15 moving the primary undercutter relative to the secondary undercutter in a first reciprocation direction;

whereby said moving primary undercutter entrains the 20 secondary undercutter and continued movement of the primary undercutter constrains the secondary undercutter to move with the primary undercutter in the first reciprocation direction,

reversing direction of moving the primary undercutter,

whereby continued motion of the primary undercutter 25 causes the secondary undercutter to reverse direction, and

cutting hairs between the outer cutter and the undercutter assembly.

31. A method according to Claim 29 or 30, including the 30 step of causing the secondary blade elements to move relative to the primary blade elements in the reciprocation direction in a lagging relation with respect thereto, whereby to provide contact between adjacent blade elements for trapping said hairs.

32. A method as claimed in Claim 31, wherein the secondary undercutter blades lag relative to the primary undercutter blades in response to the inertia of the secondary undercutter.

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33. A method according to Claim 29 or 30, further comprising the steps of:

    biasing the primary blade elements towards the outer cutter by a primary biasing element; and

10    biasing the secondary blade elements towards the outer cutter by a secondary biasing element.

34. A method according to Claim 33, further comprising the step of positioning the secondary biasing element  
15    between the secondary undercutter and the primary undercutter.

35. A method according to Claim 33, for use with shaving apparatus further having a carrier external of the  
20    primary undercutter, and method further comprising the steps of:

    biasing the primary undercutter to the carrier through the primary biasing element; and

25    biasing the secondary undercutter to the carrier through the secondary biasing element.